AMERICAN JOURNAL OF OPTOMETRY

Vol. 4 APRIL, 1927 No. 4

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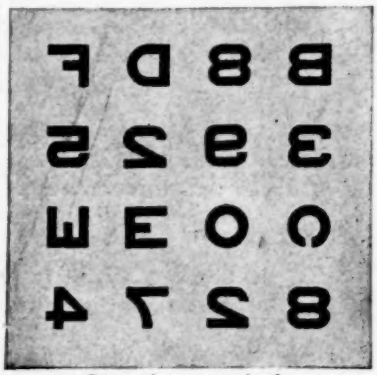

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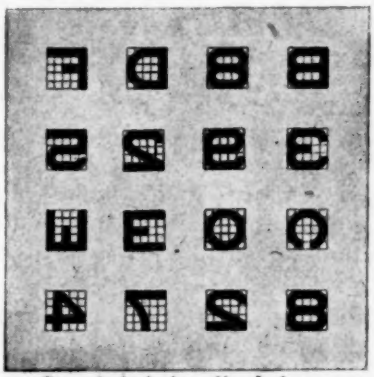

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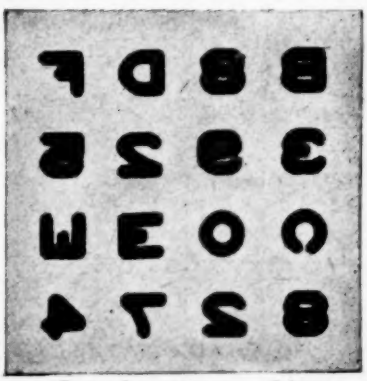

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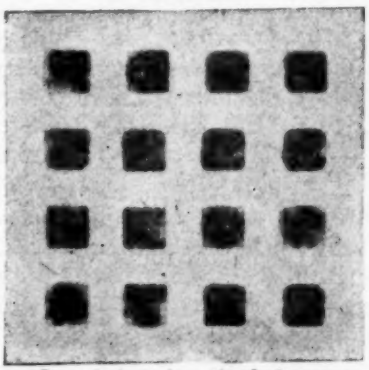

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RESULTANT PRISMATIC EFFECT THROUGH OBLIQUE CYLINDERS

A Graphical Method of Calculations.

Stanley Shaffer, Opt. D.

Los Angeles, Calif.

Cylinders may be considered primarily as being constructed of prisms whose bases in plus and whose apices in minus tend to meet in a common central line known as the axis of the cylinder.

The maximum power of any cylinder will always be found in a direction at right angles to the axis of that cylinder.

Decentiation of a cylinder on any meridian other than its axis will result in a prismatic effect equivalent to a prism whose base apex line is at right angles to the axis. This is true regardless of the direction of decentiation.

Any oblique axis cylinder decentered in any direction will always result in a combined prism, which may be resolved into horizontal and vertical components.

During reading, that is with the visual axis passing through a point below the optic center of the distant prescription, the following prismatic results are obtained:

Plus Cylinder:

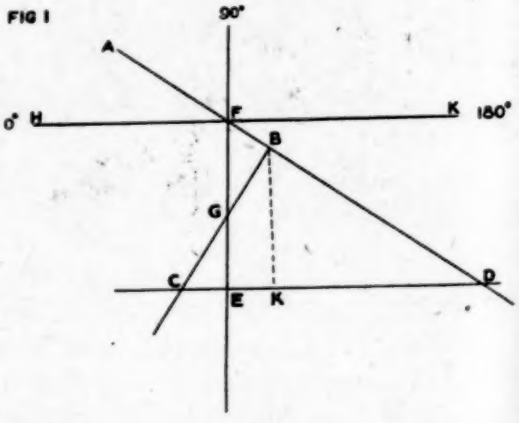
	Meridian	Prism Base
O. D.	1° to 89°	up and out
O. D.	91° to 179°	up and in
O. S.	1° to 89°	up and in
O. S.	91° to 179°	up and out

Minus Cylinder:

O. D.	1° to 89°	down and in
O. D.	91° to 179°	down and out
O. S.	1° to 89°	down and out
O. S.	91° to 179°	down and in

Key to problem, Fig. No. 1, Line A. D., represents the axis of the cylinder. Line H. F. is the horizontal working axis of the lens. Point F. is the optic center of the distant lens. Point C is the point through which the visual axis passes while the patient is reading. Line CE represents the horizontal convergence which is parallel to the working axis HK on the lens. Line FE represents distance vertically between C and F resulting from the patient looking down while reading. Draw line CB from point C to line AD the axis of the cylinder so that line CB is perpendicular to line AB. If we calculate the distance CB we can by Prentises Law of decentration obtain the prismatic effect of the cylinder at point C.

FIG 1



Now, suppose we have a 5.00 D cylinder at axis 30 over the right eye.

Let us calculate the prismatic effect of the cylinder if the patient's visual axis while reading passes through the lens eight millimeters below and two millimeters nasalward of the optic center.

In Fig. No. 1—Angle AFH=30°.

When the straight line AD cuts the two parallel lines HF and CD the adjacent external internal angles are equal.

Then angle AFH and angle FDE are equal. Therefore angle FDE is 30°.

Now in triangle CBD, line CB perpendicular to line AD.

Therefore angle CBD is a right angle and equal to 90°.

The sum of the internal angles of any triangle is 180°.

Therefore if angle CDB is 30° and angle CBD is 90°, angle BCD is 180°—(90°+30°) or 60°.

Now in triangle CGE, angle GCE is 60°.

The amount of convergence represented by line CE is two millimeters.

$$\text{Tangent} = \frac{\text{opposite side}}{\text{adjacent side}}$$

$$\text{Tangent GCE} = \frac{GE}{CE}$$

$$1.7321 = \frac{GE}{2}$$

GE=3.4642m/m

Line FE is 8m/m, line GE is 3.4642m/m, therefore line GF=FE—GE or 4.5358m/m.

Angle GCE=60°.

Angle CEG=90°.

Then as the sum of the internal angles of any triangle equals 180°.

Angle CGE=30°.

When two straight lines cross the opposite angles are equal.

Therefore angle FGB=30°.

$$\text{cosine} = \frac{\text{adjacent side}}{\text{hypothenuse}}$$

$$\text{cosine FGB} = \frac{BG}{GF}$$

$$.86603 = \frac{BG}{4.5358}$$

BG=3.9281m/m

$$\text{cosine GCE} = \frac{CE}{CG}$$

$$.5 = \frac{2}{CG}$$

CG=4

$$GB = \frac{3.92}{}$$

7.92m/m, distance of point C from the axis of the cylinder.

Then according to Prentices Law of Decentiation:

5 : 10=X : 7.92
10 X = 39.6
X = 3.96Δ

Therefore the resultant prismatic effect is 3.96Δ base up and out on the 120° meridian.

To calculate the horizontal and vertical effects of this prism,

In the triangle BCK angle KCB is 60° Side CB 3.96Δ

$$\text{sine} = \frac{\text{opposite side}}{\text{hypothenuse}}$$

$$\text{sine } 60° = \frac{BK}{CB}$$

$$.86603 = \frac{BK}{3.96\Delta}$$

BK=3.45Δ base up

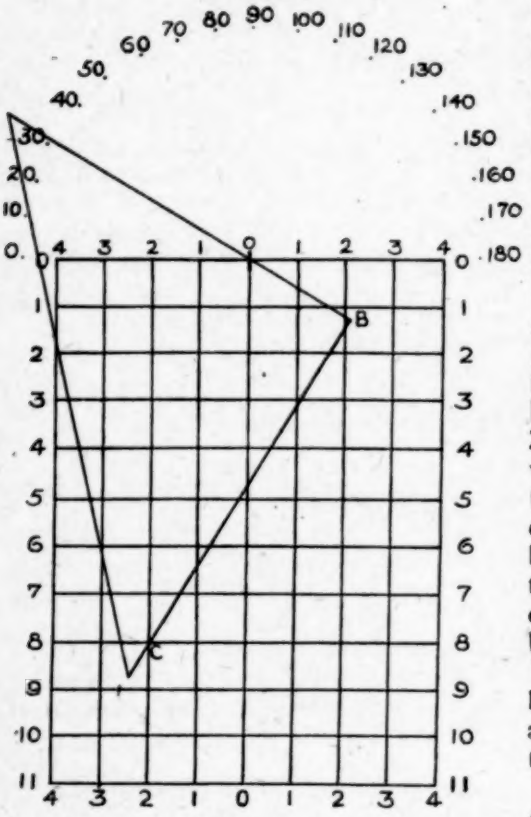
$$\text{cosine } 60° = \frac{CK}{CB}$$

$$.5 = \frac{CK}{3.96}$$

CK=1.98$^{\Delta}$ base out.

To enable the optometrist to quickly obtain the above results by graphical method I have constructed the following graph:

FIG 2



The black cross at O in the horizontal and O in the vertical represents the optic center of the distant lens through which the axis of the cylinder must pass.

Remember when calculating for convergence, the RIGHT EYE TURNS TO THE LEFT and the LEFT EYE TURNS TO THE RIGHT when the eyes are converging.

Take a +5.00 cyl. axis 30 with the patient's visual axis passing through the lens 8m/m below and 2m/m to the left of the optic center for convergence while reading.

First count down to the horizontal line No. 8.

Second count to the left to vertical line No. 2. Let this point be known as point C. Third take a square and if the axis of the cylinder is 30, line up one of the sides adjacent to the hypothenuse of the square with the 30 point on the protector and the optic center on the graph. Fourth move the square until the other adjacent side passes through point C. Fifth with a pair of pointers note the distance from C to the right angle corner of the square point B. If the graph is graduated in centimeters record the distance CB in centemeters. Note the horizontal distance from point C line 2 to point B in centimeters. Note the vertical distance from point C, line 8 from point B in centimeters. Divide each of the results by 10 and multiply by the power of the cylinder in diopters. Record as horizontal, vertical effects also CB represents the combined horizontal and vertical effect. The base of the combined prism will be at B the apex at C and the base apex line of the prism will correspond to line CB in direction.

To correct the prismatic effect of the cylinder we must place a prism whose base is at C and whose apex is at B and whose base-apex line corresponds to line CB.

Note: Where we have mentioned the optic center of the distance lens we refer to the optic center of a spherocylinder or the geometric center of a plano cylinder lens.

COMMENTS ON RESERVE CONVERGENCE

C. A. Perrigo, Opt. D.
Norfolk, Nebr.

In the old days if one made a systematic fogging test it was assumed he had done a good job of refracting. The tests made were all accommodative. The sole aim was to get clear sharp vision. But lately we have learned not only that we must have clear sharp vision but comfortable vision as well. In fact if either is to be sacrificed, comfort must take precedence over sharpness of vision.

It was with a view to solving the problem of comfort that experiments were made on the adductive and convergence faculties. Here the work of Peckham and others will stand out in bold relief. At first the writer in his own work gave more attention to adduction than to convergence powers; now, however, convergence receives the major attention, especially the reserve. In fact all through his work, the writer places more faith in Dynamic Tests than in distance tests. It seems only reasonable to assume that if there is any weakness in a muscle, that weakness will show up more readily under strain than when at rest.

Since we measure accommodation with spherical lenses, convergence can also be measured with prisms. Inasmuch as we can stimulate or allay accommodation with minus or plus lenses so also can we stimulate or allay convergence with prisms. The writer had been practicing Optometry for several years before it came to him clearly how to calculate the amount of convergence exercised with a given amount of accommodation. Thinking possibly there are others who may appreciate a simple explanation of ways and means of measuring convergence, the writer offers the following:

According to the laws laid down by Prentice one prism-diopter will cause a deviation of one cm., at a distance of one meter. Then to displace an image or point six cm., at a distance of one meter would require six prism-diopters.

Let us assume then the individual under test has a P. D. of six cm. If his eyes are regarding a distant object his visual axes are in a state of parallelism. The distance between his visual axes at a distance of one meter would be six cm. Now with the eyes still at infinity it would be possible to bring about a convergence of the visual axes at one meter by interposing a six diopter prism, base out, before one eye.

Then it follows that if the individual himself brings about a convergence of the visual axes at a distance of one meter without the aid of prisms, he is exercising six prism-diopters of convergence. Further, if he converges at fifty cm. he is using twelve prism-diopters of convergence, and at one-third meter he is using eighteen prism-diopters.

Since these calculations are all based on a P. D. of six cm. it follows that a wider P. D. would require more convergence at a given distance. In short, the amount of convergence exercised by individuals at the reading distance varies directly as their pupillary distance. Therefore no two individuals use the same amount of convergence in reading unless they read at the same distance and their P. D.'s are equal. (Assuming orthophoria.)

If an emmetrope accommodates for a distance of twenty inches we say he uses two diopters of accommodation. At the same time he is also using two meter angles of convergence, and it is only necessary to multiply the number of diopters of accommodation in use by the P. D. in cm. and you have the number of prism-diopters in use at that distance. If we assume a reading distance of thirteen inches to calculate the convergence in play merely multiply the P. D. in cm. by three.

In the commercial world the law of supply and demand controls the market. It is also true with an individual in reading that his ability to supply the demands on his accommodation and convergence controls his comfort. I believe it is generally accepted that one cannot use over prolonged periods of time more than half of his accommodation or convergence. Generally speaking then, we can deduce the rule that the reserve convergence must at

least be equal to the convergence in use at the reading distance if comfortable vision is to be maintained. Here then we see how essential it is to explore the reserve convergence of every pair of eyes we examine, just the same as we probe the depths of the accommodative powers.

The writer finds the reserve convergence in the following manner: The patient having been properly fitted with spheres or cylinders for the reading distance, we ascertain the amount of prism power, base out, the patient can overcome without blurring or diplopia while regarding a vertical line of type. This constitutes his reserve convergence.

Now, I make my near point tests at sixteen inches usually, so that a patient having a P. D. of 65mm. should be able to overcome two and a half times 6.5cm. or namely, sixteen prism-diopters base out. If he cannot do this, and he is one who uses his eyes constantly for close work, I would supply enough prism base in until his reserve equals the convergence actually in use.

Now up to this point I have assumed that the patient was orthophoric for distance. However, should he have exophoria for distance the amount of convergence actually in use at sixteen inches would be more than two and a half times his pupillary distance in cm., e. g., should he exhibit an exophoria of four prism-diopters at distance, the convergence actually in use at sixteen inches with a P. D. of 65mm. would be two and a half times 6.5cm. plus four. This gives a result of twenty prism-diopters, and his reserve should be equal to this amount.

In all the foregoing the pupillary distance has been a vital factor in our calculations. The writer feels the most accurate method of finding the pupillary distance of the patient is subjectively, and he hopes to propose something along this line at a later time.

EPILEPSY AND EYESTRAIN

R. M. Peckham, Opt. D.

Waterbury, Conn.

A Paper Read at the 25th Annual Meeting of the National Society for the Study of Epilepsy, New York City.

A paper on eyestrain may not seem exactly apropos at a meeting devoted explicitly to the study of epilepsy. To my knowledge, no studies have been made of the refraction or binocular functions of epileptics. It might be possible that such a study would be worth the making, perhaps fruitful of surprising results.

As several of the previous speakers have pointed out, the patient must be relieved of all physical and mental irritants to make treatment successful. And it is highly probable that the somatic stress induced by eyestrain is a factor worth considerable attention.

But you have many patients other than epileptics. There is the great border line of nervous disorders almost indistinguishable from the epileptic type, and the multitude of nervous and mental cases of all types that come to the neurologist and psychiatrist in consultation. Especially in behalf of these latter, do I come before you today. For there are many sufferers from what we generically classify as nervous disorders, whose whole trouble springs from eyestrain.

Unfortunately, our medical schools give no instruction in the ocular functions. So, the graduate enters general practice with no knowledge of the damage that may ensue from uncorrected refractive error and binocular incoordinations. It is, indeed, a sad mischance that the average physician has no more knowledge of the mechanism of ocular functions than has the layman. Even in the post-graduate schools in ophthalmology, less attention is given to refraction and the functions of sight than to ophthalmic disease.

To a group of specialists in mental and nervous disorders, as this present, it is scarcely necessary to point to the fact that many times these disturbances have their genesis in some irritation of an organ far removed from those in which the symptom presents itself.

For example, we have a few isolated cases of chorea benefited by the application of the correct glasses, and here is a field in which no real investigation has been made. Few of these cases are referred to the eye specialist for refraction, and it is possible that in those few cases no earnest effort is made to determine whether or no there is a high latent error that might prove a disturbing factor, nor is it probable that there is often a close follow-up in many of these cases.

We find those afflicted with amnesia to be suffering from eyestrain of the most pronounced type, and who shall say that correction of those binocular imbalances might not have enabled those individuals to withstand other nervous disturbances that finally led to their breakdown. We find instances, without number, of migraine, chronic dyspepsia, constipation, intestinal pain, directly traceable to eyestrain and relieved by proper glasses or ocular exercises without further medical treatment. And we find still a greater number of cases that resist all efforts of the physician until the stress of eyestrain is removed.

Thirty years ago, Hazen stated that 50 per cent of the inmates of insane asylums and sanitariums were there because of uncorrected eyestrain; a statement received at that time with laughing incredulity; yet, today, in the light of better knowledge, we cannot deny the plausibility of Hazen's assertion.

In view of the alarming increase of mental and nervous diseases, the outcome of this era's industrial demands, the neurogolist can neglect no possible source of nervous irritations, nor should he overlook the eyes as a possible source of trouble.

And this is the more necessary with patients whose occupation demands several hours daily at close work. For the mechanism of vision was developed in the environment of out-of-door life, with visual attention and fixations at distances of at least several yards, more often at much greater distances, and with seldom more than momentary use at what we now term the near-work point. Yet within the short span of a couple of generations, we have so modified our existence that nearly all gainful occupation is carried on with the work within arm's length; hours of unceasing visual attention at this close point are required. While there are a few individuals able to carry on such work without difficulty, the vast majority have not yet reached that stage in ocular evolution where their eyes can maintain, without fatigue, fixed adjustment for close work.

It is not my intention, this morning, to devote much time to discussing the effects of eyestrain. Rather, I would bring you our present idea as to the mechanism by which ocular structural defects are compensated, so that the patient gets clear single vision in spite of these structural refractive errors.

The last few years have brought us much knowledge, to replace that guesswork of the past. While we know that we have not solved more than a small part of the great problem of eyestrain, yet we feel that we have arrived at certain fundamental principles, and that we are now on the highroad to our objective.

The two great causes of eyestrain, as we have long known, are latent hyperopia, and convergence insufficiency. But we have lacked both the knowledge of their cause and the means of correction.

Some of the symptoms, not usually thought of in connection with eyestrain are:

Malnutrition in children, poor appetite with anorexia—I have had astonishing results in seeing children develop in bodily and mental vigor after being fitted with the proper glasses; during violent headaches from hyperopia, usually adults experience an absolute loathing of food, even of water; car-sickness, usually due to convergence insufficiency; dizziness, sometimes, in extreme cases accompanied by palpitation and complaints of heart pains; sensations of nausea and fainting while moving through crowded stores or thronging streets; these two latter symptoms are common signs of convergence insufficiency in women; headache on the day following a motor ride or a visit to the movies; early

morning headache after an evening spent in reading; insomnia; chronic indigestion; chronic constipation; momentary sleepy spells, characteristic of latent hyperopia; and I have seen many cases of acute mental distress, absolute hysteria, relieved by correction of the causative eyestrain; low blood pressure usually is found in cases of esophoria from latent hyperopia, and all treatment is without avail, in such cases, until the hyperopia is fully corrected; migraine is a typical eyestrain trouble; occipital headache has not been generally associated with eyestrain, but it is frequently due to the difficult fusional adjustment required in esophoria.

I am not attempting to say that in every case presenting these symptoms the genesis lies in eyestrain, but eyestrain is a causative factor, or as an associate in the etiology of these disturbances, has not received proper recognition. Frequently other lesions associate with eyestrain in provoking the chain of syndromes.

Latent hyperopia has been the bane of refractionists from the earliest days of spectacle fitting. The necessity of disclosing and correcting this error has been fully recognized, but since the cause of the persistent latency, the mechanism by which the error was compensated, was not well comprehended, efforts to make the error manifest and correctible have not been very successful.

Before proceeding to discuss the mechanism by which the hyperopia is covered, and the newer methods by which we can disclose it in full, I think, since most of you are not eye men, that we should define some of the terms in our technical phraseology.

The emmetropic eye is an idealism which probably does not exist. Structurally, such an eye would be of that form and refractive power that, with the accommodation suspended, rays of light from infinity would focus exactly on the retina.

The normal eye is hyperopic. That is, the depth of the globe is disproportionate to the curvature of the cornea, so that rays of light from infinity are focussed slightly behind the retina.

These rays pass through the retina at an obliquity to the visual axis, converging toward the focal point behind the retina, and thus forming an acute angle with the visual axis. It is thought that the reception of these oblique, converging rays in the retina brings about the reflex that results in accommodation.

Accommodation is the activity of the ciliary processes by which the crystalline lens is made more convex, compensating, by its increased refractive power, for the hyperopic error and bringing the rays to focus on the retina. When the error is very great, this compensating effort is difficult in the extreme.

The error is corrected by that convex lens that will bring the rays to focus on the retina with the accommodation relaxed, the crystalline lens flattened into its static position.

The visual axis is the line of sight, the imaginary line extending from the fovea to the object of fixation.

The macula, at the posterior pole of the globe, is known as the field of direct vision. The fovea, at about the center of the macula, is the point of keenest vision.

When we look at an object, we so vert the eyeball that the part in which we are most interested shall fall directly on the fovea.

Structurally, the visual axes diverge. This divergence is called exophoria. But when we fix the attention on an object, these visual axes are converged to intersect in the plane of the object of regard. This brings both foveae in position to receive identical images on identical retinal receptors.

Convergence is the faculty by which these two images are brought to the identical points and mentally fused and interpreted as one.

The ideal structure is that in which convergence and accommodation are so innervated that fusion and sharp focus are accomplished with a synergistic impulse.

The accommodation is a part of the involuntary system and the convergence is of the voluntary system. In some persons, the two functions are so closely associated, so intimately connected that they are practically inseparable, and, in all fairness, we can say that the central system controls them in synergism, although they are of different systems. It seems to be a voluntary function in control over an involuntary function. The intimate mechanism of this control we know

nothing about, but we have clinical and experimental proof of its reality. There is also evidence that incitation or repression of the accommodation has a reflex effect on the convergence.

The ability of the accommodation to compensate for hyperopic error is rather limited. If the error is too great for the accommodative resources, some individuals can call the convergence to aid, and the error is covered by this convergence—controlled effort.

When the synergistic convergence-accommodative impulse brings about focus and fusion, we call the position of the visual axes "Accommodative Orthophoria." And the eyes appear to be emmetropic, though, in fact, they are structurally hyperopic and exophoric. The refractive error, being covered, is called the "Latent Hyperopia." The exophoria also being latent, I have introduced the term "Latent Exophoria," and wherever there is a latent hyperopia, there must be an accompanying latent exophoria.

When the convergence-accommodative impulse brings the visual axes to the orthophoric position, that is, where fusion is accomplished by this synergistic impulse but this innervation fails to cover all the hyperopic error, then that uncared for part of the hyperopia is readily discoverable, easily corrected by convex lenses. This uncovered part of the error is called the manifest hyperopia.

Correction of the manifest error does not relieve the person from eyestrain. It is the latent error and the effort to hold it covered that is the trouble-maker. For years we have been content to correct the manifest error, and therein have we erred. Further, by this custom of correcting only the easily found manifest error, we have not contributed our quota to therapeutic practice.

If the error does not exceed the normal accommodative resources, if it is not so great but that the required innervation may be supplied through the regular involuntary channels, there seem to result no untoward visceral reflexes. It is when this error exceeds the involuntary accommodative resources, and the convergence is called upon to induce the excess accommodative effort that we get these disturbances.

If the structural conditions are such that there is a low exophoria, with a small amount of convergence needed, together with a high hyperopia and a large amount of accommodation required, and if the convergence is called on to carry the accommodation to summation, the convergence must over-carry, the visual axes will pass beyond the fusion point, intersect at a point within the plane of the object of regard, and we have the condition known as "Accommodative Esophoria." At this juncture, the accommodation must be held tense while the convergence is relaxed back to the point of fusion. This is a most difficult effort, and usually results in headaches and stomach disorders of the most distressing type.

If the exophoria is of high degree, and the hyperopic error is of low amount, so that the convergence requirement exceeds the accommodative need the synergistic impulse may only extend its control to that point at which the accommodative need ends, leaving convergence to travel the balance of the distance to the fusional point without the accommodative association. This condition is called "Accommodative Exophoria." There is seldom any strain connected with this manifest error. The fusional adjustment is made easily and the hyperopic error is seldom great enough to call for any excessive accommodative labor. Or, if it is, the individual goes about with blurred vision rather than to call into action the voluntary function of convergence to drive the accommodation to compensation for the error. Usually, the synergistic association is not strong enough to cover more than a part of the hyperopia and the larger part of the refractive error is manifest and easily corrected. In these particular cases, if synergism does cover a considerable amount of the error, the functions are easily separated by the occlusion of one eye or by the use of atropine.

But, in cases of manifest accommodative orthophoria or accommodative esophoria, the convergence control is so stubborn that it will not give way to either monocular occlusion or to a cylopegic. Atropine, or any other powerful cyclopogic, will release some of the accommodation, but only a small part. Occlusion, even for months, will only cause the stubborn convergence

to relax but a little its tenacious grip.

It is the belief, unsubstantiated by proof, that atropine would reveal the full static error, that has led us into the pitfalls of erroneous treatment of these cases, or, too often, led us to dismiss the patient with the statement that the refractive error was fully corrected and any troublesome symptoms still persisting were due to some other cause. But so long as that accommodative effort is left unchecked, all treatment for the symptoms displayed will be futile.

I have noticed that these individuals with a manifest esophoria, and many of those with an orthophoria, in which a high latent hyperopia and latent exophoria are covered, are of a dominant, self-willed, determined, ambitious temperament. I have never yet seen a lazy person with a high latent error. Perhaps that explains the failure of atropine to disclose the full latent error in these cases.

The accommodation can be relaxed, the full static error revealed, by mechanical relaxation of the convergence. That is, by using prisms base in, the convergence can be suppressed, the eyes turned to their normal exophoric position, and the accommodation, lacking that support, immediately relaxes and permits the uncovering of the full error. This method has the advantage over the use of atropine that the patient is not left with blurred vision and its attendant discomfort.

This theory, that the accommodation could be relaxed by suppression of the convergence, using prisms, has been held for many years. But practically we were unable to get out more of the latent error by this method than by atropine. The reason was that we lacked the equipment for handling our prisms. Loose prisms, set in the trial frame, avail little. The rotary prism gave no help. A couple of years ago, I ran across the Hazen kratometer, an instrument first built some 20 or 25 years ago, but never appreciated by the eye specialists.

Experimenting with this, I found that by using Hazen's principle of "Break Shocks" by prismatic jumps of the image, I could accomplish more than with either loose prisms or the rotary prism. The original instrument was rather small and inadequate, though its principles were sound. So we have rebuilt it in improved form, and it gives us the equipment we needed to put this theory into practical use.

In these cases of esophoria where there is a corneal astigmia, almost invariably this is partially or wholly compensated for by meridional contraction of the ciliary, or sectional accommodation. This contraction seldom gives way to atropine, so that the patient is usually left with the astigmatic error partially corrected. But by the means of the convergence suppression method, the ciliary contraction gives way and the full cylindric correction is at once accepted.

Where the structural condition is such that convergence requirements exceed the accommodative, that is, in a high exophoria with a low hyperopia, if the association of convergence and accommodation is very rigid, the excessive amount of convergence needed for single vision may carry the accommodation past the retinal focal point and bring the rays to focus at a point anterior to the retinal plane. Thus is produced a pseudo-myopia, often mistaken for true myopia.

If this false diagnosis is made, and concave lenses prescribed for the correction of the manifest error, the case invariably develops into a true myopia and frequently into the malignant progressive myopia, so dreaded by all conscientious refractionists.

A typical case is presented by a man of 30, apparently myopic, fitted under atropine with weak concave lenses. A few weeks after obtaining these glasses, he began to suffer severe pains in the right abdomen. Two physicians diagnosed the case as appendicitis. A third physician felt dubious about this diagnosis and referred the patient to a consulting Optometrist. By relaxing the convergence, a high hyperopia was revealed and corrected. The pain diminished, symptoms finally disappeared and there has been no recurrence.

A man of 52, fitted with weak convex lenses and an astigmatic correction (which we later found to represent a spurious astigmatism) was forced to give up his desk work and resort to out-of-door occupation. Suffered from chronic indigestion, blood pressure was very low and would at times drop off 15 to 20 points in two or three days. Had suffered for years from insomnia,

became nervously depressed, irritable, at times really ugly. No response to medical treatment. Analysis of stools showed sepsis of most pronounced character. Placed in the care of an Optometrist, who found a high esophoria. The convergence was relaxed, the latent hyperopia disclosed and corrected, daily exercises in convergence relaxation given with the kratometer. Immediately the man began to sleep well, and in a few weeks blood pressure returned to normal and has so remained. Six weeks after this ocular treatment was added to the medical treatment, stool analysis showed a marked improvement in biliary and starch digestion. Response to medicines steadily improved and his present condition of good nature and improving health is a startling affirmation of the assistance the Optometrist can render the physician when the two co-operate in their efforts.

Such instances could be cited ad infinitum. A young woman, about 28 when I met her, had suffered for years from the most dreadful sick-headaches, which came on at intervals of six to eight weeks. She would be forced to go to bed for three or four days. Extreme nausea, vomiting, loathing of food always accompanied these attacks. Physician after physician was consulted, but no relief found. I found considerable esophoria at distance, with a convergence insufficiency at the reading distance. She had worn glasses for about 15 years, and had copies of all her prescriptions. Some were for concave lenses, some for weak convex, some called for astigmatic corrections, others omitted them. I found quite a high degree of corneal astigmia, masked by the convergence-accommodative effort. Vision was considerably above normal. After suppressing the convergence, the full correction for the astigmatism was accepted and quite a high amount of latent hyperopia disclosed. Correction of the error brought relief, and in this instance no further medical treatment was necessary.

The difference between this method and the older custom is, that formerly we attempted to relax the accommodation, not realizing that what we falsely termed "accommodative spasm" was due to convergence control. Now, knowing this, we suspend the convergence and the accommodation is automatically relaxed. The method is easier, takes less time, does not annoy the patient, and we discover more latent error than by the old method.

Esophoria is the most difficult of all eyestrains to correct, and is the most fruitful of physical, nervous and mental disorders. These disturbances are not amenable to medical treatment so long as the latent hyperopia remains uncorrected. But remove this strain, and your treatment brings immediate relief.

The esophoric person always has good vision, usually above normal. This is due to the contraction of the pupil following high convergence effort and further contracted mechanically by the anterior bulging of the crystalline. You will note, as a sign of esophoria, that the pupil is abnormally small, particularly in adults of presbyopic age. And because of this extraordinarily good vision, which he has learned is usually better than his confreres', he refuses to admit that he is subject to eyestrain or needs any attention whatever for his eyes.

Esophoria is so prevalent among the type of patients who are compelled to visit the neurologist's office, especially among those of 40 years or more in age, that I would recommend the use of a very simple test that any physician can make, whether he has given any attention to ocular functions or not. Take an ordinary square prism, of 5 Δ or 6 Δ power, tell the patient to look at any object on the opposite wall of the room, a picture, a card, a letter or a doorknob, then holding this prism with its thick edge down, and exactly horizontal, over either eye, ask the patient about the two objects he now sees, the one above the other. Ask him if the upper object is directly over the lower one, or if it is to one side. And if the upper image is at the same side of the lower one as is the eye over which the prism is held, then you have indubitable proof that this is a case of esophoria. And so long as that ocular condition is present, no medicines, no rest cures, no suggestive treatment, no mechano-therapy or other therapy will avail. The patient will not get well, nor will he show any response to your therapeutic measures, until the latent hyperopia has been made manifest and corrected in full.

The other great source of somatic stress due to eyestrain is convergence insufficiency. This is the inability of the individual to easily and without conscious effort fuse the two images seen by the two eyes into one clearly defined mental picture. Convergence insufficiency was for long thought to be due to muscular anomaly, so we had a period of tenotomies and tuckings, but all these operative measures proved lamentable failures.

Convergence insufficiency is not a structural defect, but a functional difficulty, and is now known to be entirely of phylogenetic origin.

Convergence, single vision from the fusion of two retinal images, is one of the last steps distinguishing the anthropological biped from the quadruped. And convergence, and the association of convergence and accommodation are the last steps in the evolution of human vision.

Convergence is not an innate heritage of the species. The human child is not born with control over the horizontal associations of the ocular versions. These he develops individually, experientially, and often fails to develop them properly. The evidence would warrant us in assuming that the functions of binocularity are still in an evolutionary state, and this would account for the many vagaries we encounter.

Convergence insufficiency is due to arrested, or immature development of the faculty of convergence. It is an unfortunate heritage of the visual habits of our primordial ancestors, to whom convergence was unnecessary and unknown.

Accompanying convergence insufficiency is usually what seems to be a low amplitude of accommodation. This, for years, following the old way of diagnosing by the manifest error and correcting it as it stood, was termed "Premature Presbyopia." It has been the custom to give such young people "Rest Glasses" for near work. However, these glasses are not needed. The treatment is the education of the function of convergence, the creation of correct habits of innervation and synergic associations of convergence and accommodation.

This is not the place to go into details as to the technic of this procedure. Suffice it to say that, utilizing the Hazen system of successive breakshocks by jumping the images off the maculae by means of prisms, awakening the necessity and desire for convergence effort, the pathways are established in a very few weeks of daily exercises.

Prism exercises have been found by some to be very successful, but others have condemned them s e v e r e l y. Doubtless, this was because those who have tried and failed have not apprehended the cause of the trouble and have probably given exercises to the wrong cases. Others have condemned without trial, and the criticism of such can be dismissed without comment.

Then, until recently we have lacked equipment. Formerly, convergence insufficiency was thought due to muscular anomaly, and efforts were directed toward stretching the externi or building up the pulling power of the interni, and the rotary prism was used for this purpose. I need not point out to nerve specialists the fallacy of these notions nor the ignorance of nerve-muscular reflexes that permitted such notions to be generally accepted by ophthalmologists. Today we have at hand the equipment with which to successfully inaugurate and carry through this work, basing our technic on fundamentally sound principles.

Another annoyance usually found with convergence insufficiency is the habit of intermittent monocular and binocular vision. Vision in one eye or the other will fade out, one eye or the other suspends, sometimes for only a fleeting second, sometimes for several minutes. The individual is unconscious of this, only realizing that "Some thing seems to be the matter." The slight discomfort experienced is occasioned by the effort at convergence needed when the suspending eye resumes functioning.

This, again, is a vestigial trace of the visual habits of the lower vertebrates, who use the eyes in monocular alternation.

This intermittency was first analyzed by McFadden, a Massachusetts optometrist, and named by him "Suspenopsia." This in 1922. Previous to this, ophthalmology had not recognized the true source of this trouble.

Treatment methods for Suspenopsia must appeal to the habit of mental at-

tention. To develop this, I have utilized the stereoscope with partially dissimilar pictures which must both be seen to make the whole. And to create the fixed habit of attention and the habitual response of the version and convergence centers, I have applied the Hazen sliding prisms to the stereoscope. This method is so effective, that we can eradicate the habit of intermittency in a few weeks of daily treatments.

Those with convergence insufficiency and with the habit of Suspenopsia are unsafe motor drivers. How many accidents are due to defective binocular co-ordination, it would be impossible to state, since in none of the visual tests recommended by ophthalmologists have these binocularity tests been included.

The problems of eyestrain are so vast that only these few phases can be but slightly touched in this paper. What I hope to bring to your attention is the necessity for eliminating this as a factor when you are confronted with disorders that do not yield to your customary treatment.

And my plea is for closer co-operation between neurologist and optometrist. Our fields of endeavor overlap at many points. We have cases of apparent ocular discomfort that are not due to eye defects but to physical and mental disturbances that lie in your fields. And you have cases where the involvement of functions because of eyestrain need our assistive attention in addition to your treatment.

Again, all that modern optometry has gained in greater knowledge, better technique, improved opportunity for service has come through the work of your great men, Bing, Dana, Jelliffe, Sherrington, Loeb, Thomson, Ladd, Lucas, Bayliss and a host of other researchers in the domain of neurology. In the past three decades ophthalmology has made no noteworthy contribution to the science of refraction. But the modern Optometrist, non-medical, profiting by the knowledge gained and given to the world by these researchers who are wresting from secretive nature the laws by which she moves, is putting this new knowledge into practical use. The day has come, when, even as non-medical dentistry has proved of inestimable service to general medicine, so can non-medical optometry become an invaluable ally of the neurologist.

REPORTED CASES

W. S. Farmer, Opt. D.
Oklahoma City, Oklahoma

Dr. Wm. F. Bonner (1) reports three interesting cases of monocular color blindness as follows: Case "A" from the U. S. Veteran Bureau, poor vision left eye, fundus normal. Vision 20/200 Malingering tests negative. Perimeter right eye normal. Left field decidedly constricted. Vision not improved with glasses. Examination of the color vision was normal when using both eyes and with the right eye, but total color blindness in left eye.

Case "B" also from U. S. Veteran Bureau, normal distant and color vision in left eye, but needed correction for near vision. Right eye vision 20/200 improved to 20/70 by plus 3.75 sphere. Fields of vision constricted in both eyes, but more marked in the right eye. Complained of inability to see green colors with right eye.

Case "C" had vision of 20/100 right eye, improved to 20/40 by a plus 2.00 sphere. Vision of left eye was 20/40 improved to 20/20 by plus 1.00 plus .50 cyl. axis 180. Presbyopic correction was plus 2.00 sphere added for each eye. Fields of vision very constricted in each eye, patient had poor color vision when using both eyes or when left eye was covered, but when the right eye was covered he had normal color vision. Since his right eye was the dominant eye, when both eyes were in use, his binocular color vision was affected. Had his left or non-dominant eye only been color blind, doubtless it would not have interfered with binocular vision.

Dr. Bonner's conclusions are as follows:

1. The cases of monocular color

blindness recorded have been very few.

2. Cases presented; a. Total monocular color blindness. b. Partial monocular color blindness. c. Binocular color blindness caused by color blindness of the eye of choice, but normal color vision in the other eye when the poor eye is occluded.

3. a. All occupations requiring normal color vision should have the eyes examined separately. b. Other pathologic conditions are often associated with color blindness, therefore color vision test should be included in the routine examination. c. Examination of automobile drivers for color blindness is necessitated by the use of colored lights as traffic signals.

Hysterical Amblyopia.

Dr. Gaudissart (2), a French Oculist reported two cases of Hysterical Amblyopia. The first a woman 29 years old, who had lost her vision within a week. Complained of Photophobia, pupil reaction sluggish. Visual fields irregular and contracted, conjunctival reflex absent. Eye and health normal in other respects. Vision was better binocularly than monocularly. Distance vision was brought to normal with minus 2.50 sphere. While small type could not be read at near, either without glasses or with plus 3.00 sphere. After a few months her vision again became normal.

The second patient, a woman, age 22 years, had noticed impairment of vision for 2 months. She had photophobia with much lacrimation. The visual field was as in the first case with a central scotoma for colors. The course followed was similar to that of the first case. The writer is inclined to believe that cramped ciliary accommodative muscles had something to do with the first case above. A case somewhat similar to the above cases was referred to the writer for consultation recently by Dr. J. Beatty of Okla. City. Lady, age 32, complete spasmodic nervous ptosis of both upper lids, with a like nervous jerking of entire left side of body, pupil reaction sluggish, refraction plus .50 sphere which did not improve original 20/40 vision O. U. Blood pressure normal. Left antrum of Highmore, slightly opaque. Teeth good as shown by X-ray. Referred to her family physician who prescribed morphine and that vision was clearing up, and eyelids could now be controlled. Diagnosed as simple hysteria by her physician.

Retrobulbar Neuritis in a Moderate Smoker.

Dr. C. G. Kay Sharp, of Bedford, England (3), reports case man age 51, complained of eyesight failing for past two years. In March, 1926, his vision was O. D. 6/24 O. S. 6/60, in each eye there was a large central scotoma for red, blue and green; with contracted fields for white. In the center of each disc was a small pale area. Fundus otherwise normal. Teeth good. elimination treatments. Case reported by phone after three days' treatment, No evidence of sinus infection. A Wasermann was suggested, but refused. Patient was a beer drinker, and a moderate smoker of medium Virginia tobacco only.

The diagnosis was retrobulbar neuritis of toxic origin. He was persuaded to be a total abstainer and nonsmoker for 12 months, and referred to his physician for the usual treatment of tobacco amblyopia, with strychnine, suitable diet elimination, etc. Four months later patient was returned for further examination of eyes. Vision in right eye was normal 6/6 without correction, and color vision was normal. O. S. was 6/24 without correction. Vision for red and blue had returned. A small central scotoma for green remaining. There was an old standing external strabismus of the left eye. In March he wore plus 7.00 spheres and could only read large type. In July he could read J-1 type with plus 2.00, his normal near correction.

Esotropia Due to Astigmatism.

Dr. Stewart Mitchell, of Okla. City (4), referred lady age 31 to writer for consultation. Patient complained of distant blur, said she was naturally cross-eyed, had been all her life and never expected any change in her condition. Had worn her old correction plus 4.50 spheres for 15 years. Vision O. D. 20/100, O. S. 20/60. Diplopia was easily obtained with red lens over one eye. Routine methods gave us 24 degrees esotropia for distant, without any correction and 18 degrees at near. With O. D. plus 2.50 plus 2.00 cyl. axis 150; O. S. plus 4.00 plus 2.00 cyl.

axis 150, her vision was O. D. 20/60 plus, and O. S. 20/20. Right eye was deviating. Her esotropia with above correction was for distant 20 degrees, for near (15 inches) 9 degrees. The above lenses were prescribed and delivered the following day. Fusion at near was possible and comfortable at once, but diplopia was present at distance. As patient was leaving town she was requested to report three days later; at which time she had orthophoria for near and 4 degrees esotropia at distance, but no diplopia and fusion was comfortable.

Conclusions:

While there was some amblyopia due to non-use of right eye, the esotropia was in all probability due to the astigmatism, and was not purely accommodative as the principal change made in her correction was the cylinder or astigmatic correction. Fortunate for her, fusion had not deteriorated and was strong and active. Hence with the assistance given fusion by the cylinder correction it was able to perform its function properly. It proved quite a pleasant surprise to our patient and we are expecting nothing but the best results with this case in the future.

Bibliography.

(1) Dr. Bonner, W. F.; M. D. Amer. Jour. of Oph. Vol. 9, No. 8, page 603.

(2) Gaudissart, Dr., Optical Jour. and Review, Dec. 30th, 1927, page 40.

(3) Sharp, C. G. Kay, Dr., Optical Jour. and Review, Jan. 20th, 1927, page 24.

(4) Mitchell, Dr. Stewart, Okla. City, Okla.

OPTOMETRIC NOTES

A SIMPLE CURRENT SUPPLY FOR 'SCOPE LAMPS

L. P. Folsom, Opt. D.
South Royalton, Vermont.

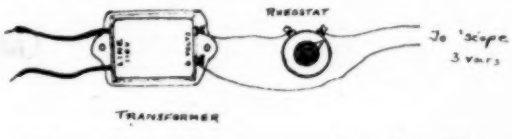
Luminous 'scope lamps are most often of the so-called 3 volt variety, requiring approximately the output of two small dry cells for operation. Experience has shown that the use of dry cells in a battery handle is expensive and inefficient. Expensive because of the cost of the cells and because the current from new cells will sometimes destroy a lamp; inefficient because when the instrument has been in use a week or two a patient with incipient cataracts or a cloudy media is sure to present herself and just when you require a little additional illumination you haven't it available because the cells are partly exhausted.

To overcome this "current controllers" have been developed and placed upon the market. These have their objections; some require a lamp for resistance, the light from the lamp and its accompanying heat often proving unpleasant; others do not require the resistance lamp but are too expensive in first cost.

Some few years ago the writer hit upon the idea of removing all of these objections. The device which follows is fool proof and simple for anyone to construct. We have used two of them for some time and made others for friends all of which I believe "work to perfection."

Purchase what is known as a "bell-ringing transformer" from an electrical or "five and ten" store, the expense of which will be in the neighborhood of a dollar. Get a thirty ohm radio rheostat and a couple of binding posts and you have it all, probably a total expense of about a dollar and a half.

The transformer connects to a 110 volt alternating current circuit and steps down the voltage to about 6 volts. The small rheostat is inserted to reduce the voltage still lower and you have a varying current supply of from 0 to 6 volts. Naturally you will wish to find the point beyond which it is not safe to burn the lamps and make a stop to prevent turning the rheostat further. The device can be mounted in a small box for wall or table use since it generates practically no heat or in any other way suiting the fancy of the maker. We have built in such a device into the velvet lined box which holds the instruments when not in use. The sketch and wiring diagram follows:



(For alternating current only. Very few cities have "direct" current.)

THE AMERICAN JOURNAL OF OPTOMETRY

Vol. 4 APRIL, 1927 No. 4

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Published monthly as the organ of the Delaware, Iowa, Maryland, Minnesota, Nebraska, North Dakota, Oklahoma and Vermont Optometric Associations.

Original papers, scientific communications and correspondence should be addressed to the Editor. Books for review should be sent to Dr. E. O. Fjelstad. Clinical Reports and Society Proceedings should be sent to Dr. J. I. Kurtz. Practical Notes and Current Refractive Topics should be addressed to Dr. R. M. Peckham, Waterbury, Conn.

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OPTOMETRIC EDUCATION

Considerable discussion is being carried on in different parts of the country as what shall constitute the educational requirements for Optometry. Some contend that a four year college course be required and others advocate that not more than two years of college training be required. The main argument is that we will only be able to attract students to take up Optometry if we will keep our requirements down to two years. This argument would be true if our prospective optometry students were to be made up of a class of men who are already established in business. Naturally a class of this kind would look for a course which would require the least of their time because each year one would have to stay away from his office would mean a considerable and actual loss of money. However, the conditions are entirely different with the students of college age. When he decides to attend college his mind is fully made up to take a collegiate course and not only does he expect to spend four years in preparing for his life's work, but HE IS NOT SATISFIED WITH LESS. For if he puts in less time in studying a profession, he is looked upon by his college classmates as an unfinished product and he feels that he is not on a par with the rest of them. Any one who is acquainted with the psychology of a university student knows this to be a fact. The years spent at the university are unproductive from the standpoint of dollars and cents and a student would just as soon spend a year or two more taking up some extra work which will fit him to do better work in his chosen field. This has always been our contention and is now borne out by a statement of Dr. Albert Fitch, president of the Pennsylvania State College of Optometry in his annual report made recently to the Board of Trustees, who amongst other things states that:

"Our clinical class, or seniors, who act as clinical assistants, doing all the refracting and fitting, number twenty-four. I particularly wish to call your attention to this group, the second three year day class. WHEN THESE STUDENTS WERE ENROLLED, IN 1924, THE MAXIMUM COURSE WE OFFERED WAS FOR TWO YEARS AND WHEN LATER WE ANNOUNCED THE INTRODUCTION OF THE THREE YEAR COURSE, THESE TWENTY-FOUR YOUNG MEN, OUT OF A CLASS OF THIRTY-TWO, SAW THE VALUE OF THIS THIRD YEAR OF CLINICAL WORK AND

ELECTED TO STAY ANOTHER YEAR."

This would also hold true if a fourth year of instruction were added. The same number of students would also spend the fourth year in college taking up the extra work, would it improve their technic.

The time element is only one phase of the problem of Optometric Education. There are others which need consideration. To get students to enroll in the Optometry courses is another phase of this problem. There is no question that we need more optometry students in our colleges and universities. This is a point all factions agree upon. The important question arises how can we get more students to take up Optometry? Before a satisfactory answer can be given to this most important question, it would be advisable to find the underlying cause or causes which are responsible for the present shortage. There are four underlying causes responsible for the existing shortage of students:

1. Lack of recognition of Optometry by the public. This will be extended to us as soon as we deserve it and not sooner.

2. The confusion as to the status of Optometry under the different departments at the various universities. This condition has been very ably discussed by Dr. Albert Fitch in his annual report to the Board of Directors of the Pennsylvania College of Optometry which reads in part:

"At the same time, as the professional optometrist in the field is doing his missionary work by rendering a high grade of service to his fellowman in a professional atmosphere and is attracting perhaps unconsciously, a higher type of youth to optometry, the schools of optometry must be under the control of the same type of optometrist whether the school be in a university or independent. This is necessary not only for better education but also that the high ideals of optometry may be thoroughly inculcated. This desirable condition is impossible in a university at the present time even though all connected with an optometry course there be ever so friendly —nay, enthusiastic toward the profession. The fact remains and the student is affected by it sooner or later, that optometry is not big enough to have its own department; that the head of the course is not an optometrist; and that the optometrists teaching these courses are not recognized as members of the faculty. The highest reward to the student for his labor and expense, as A. B. or B. S. degree, is useless to him in his chosen profession and he usually finds out before he graduates that if he intends to compete on equal terms with older men of his profession and men of another profession who do not have nearly his qualifications on starting, at least, and who are exempt from laws regulating optometry, that he must assume the title of Doctor. This, to men who are fresh from a university and who know the value of degrees, must be most repugnant. University courses are thus seriously sidetracking the development of optometry. Optometry to continue must be a profession the very nature of which must meet the public demand that whoever shall hold himself out as able to relieve ills or deformities shall be a doctor—not necessarily a doctor of medicine for the public has learned to discriminate between him and a doctor of optometry, doctor of dentistry, doctor of osteopathy, etc. Universities are hidebound by tradition and they are reluctant to elevate any calling to a state or award at the expense of lowering their traditional standing. Especially is this true in the professions when they believe that the subject they are asked to teach has not yet reached the true status of a profession."

We must try to direct optometric education along definite independent lines. Our schools and colleges should be distinct units the same as the college of dentistry, pharmacy, etc., and not be an auxiliary to a department of some college.

3. Lack of sufficient number of colleges teaching Optometry. We are well aware of the fact that many educators will disagree with us on this point. They claim that no more university courses be established until those in existence at present have large enrollments. This, we think is an erroneous idea. For instance, let us take the University of Illinois for example which has a very small enrollment, would the enrollment be any less if some of the neighboring state universities would also offer Optometry

courses? Not in the least. It is claimed that there is only one or two students enrolled in Optometry at the University of Illinois yet none of the neighboring states, like Nebraska, Iowa, Wisconsin, North and South Dakota, Montana, Minnesota, Michigan and Indiana state universities are teaching Optometry. If all of these state universities were teaching Optometry, the course would become more known among the students and chances are that even the university of Illinois would profit by it. It is our contention that each state has a sufficient number of students to supply material for all the various colleges, Optometry included. This being true then the more optometry colleges we will have the greater will be the number of students entering the field of optometry.

4. The last but not the least reason is the lack of information about Optometry schools by students and optometrists alike. This is a condition which is due to negligence and indifference on the part of individual optometrists, state and national associations and the Optometric Press. This condition can and should be remedied. The remedy is in our own hands.

The remedy is this. First, we must get the practicing optometrists acquainted with the existing optometry schools, their requirements and locations. The 20,000 optometrists of the United States with their families, friends and affiliations is the most important source of supply optometric students, which in the past had been sadly neglected.

Second: Optometric organizations and individual optometrists can carry the message of optometry, its possibilities and opportunities directly to the high schools—the original source of supply of students for all colleges and universities.

Third: We should lay out a definite educational program, which should be followed out by all optometry colleges now in existence, and those to be organized in the future. This would make our education more or less uniform.

To remove the obstacles in the way, as outlined in these pages, which are interfering with the rapid progress and development of optometric education we need an active well organized department of collegiate education. This department should have the full support and co-operation of a live department of public information.

J. I. K.

PRICE ADVERTISEMENTS

Oklahoma, it seems, leads other states in eliminating the cut-price misleading advertisements. The following letter from Dr. E. B. Alexander, Secretary of the Oklahoma State Association of Optometrists is self-explanatory:

"Regarding your editorial on 'Price Advertisement' in March issue of the Journal, may I say that Oklahoma barred price advertising in 1923. As far as I know not one price advertisement for an Optometrist has appeared in an Oklahoma newspaper since that time.

I am enclosing a copy of the Code of Ethics of our State Board. Any violation of this Code of Ethics is promptly prosecuted and if the violator is found guilty his license is revoked."

E. B. Alexander, Opt. D.

Code of Ethics.

Adopted by the Oklahoma State Board of Examiners in Optometry. April 19th, 1923, and Revised April 21st, 1925.

Every Optometrist practicing in the State of Oklahoma should conduct his practice in a manner to reflect credit on his profession, honor and profit to himself, and give his best service to his patients.

It shall be considered unprofessional and unethical to—

(a) Conduct your practice in a manner likely to deceive or defraud the public, or

(b) Obtain any fee by fraud or misrepresentation, or

(c) Employ either directly or indirectly any person or persons commonly known as "cappers" or "steerers" to obtain business, or

(d) Solicit, or employ any person or persons to solicit patronage from house to house, or in any public place, or

(e) Employ an unregistered person or persons to perform any act prohibited by the law governing optometry in Oklahoma, or

(f) Advertise prices, or untruthful and impossible claims regarding treatments, cures or values, or

(g) Do any material act which would disqualify an applicant for examination before this board, or

(h) Violate any provision or provisions of the Optometry laws of Oklahoma, or

(i) Violate any published rule of the Oklahoma State Board of Examiners in Optometry, or

(j) Violate any section which may be regularly added to this code.

We now understand three states have rulings of this kind in force. New York, Maryland and Oklahoma, and the profession of optometry is carefully watching these states to see just how these splendid protective measures are carried out. Judging from the letter of Doctor Alexander, the Board of Oklahoma is having good success in enforcing their rulings and if this is the case, there is no reason for other boards not doing likewise. We hope in the near future, to announce that additional states have made these provisions, and help to eliminate one of the non-ethical features which is retarding the development and growth of our profession.

C. C. K.

THE B. WOODWARD HAZEL AWARD

The Optometrists Club of Baltimore announced last July, the offering of three prizes of $100.00, $50.00 and $25.00 respectively for the best thesis on Hyperopia, its history, etiology, varities and correction. This is to be known as B. Woodward Hazel Award for distinguished Service in Optometry. Optometrists everywhere are eligible to participate.

The thesis should be submitted before the 1st of June, 1927, to the Optometrists Club of Baltimore, 113 North Charles Street, Baltimore, Md.

CORRESPONDENCE

OPTOMETRIC SERVICE.

Is Optometry a service, or an article? A pair of glasses is an article. By offering the people the article, you are not offering them a service. Therefore, wherever glasses are offered, an article is offered. Is it not to be wondered at, that so many men with a license to practice Optometry are offering the people the article, for a service. Naturally such men with licenses to practice Optometry look upon every offer of an article (glasses) as the competition. And the men with show windows offer the article, from their show window. They try to couple the article offered with "style." It is no wonder the people want to buy the glasses, rather than the Optometric service. The article is offered the people more often than the service. Look for one moment at the advertising; at the literature printed to attract the people to the Optometrist's office or store. Is it the article that is offered rather than the service? The service is seldom mentioned. Few folks naturally know about the service of Optometry, because Optometry is seldom mentioned or offered to the people. Forget "glasses" and talk "Optometric Service."

H. Clay Evenson.

A MODEL OPTOMETRY ACT

Have just finished reading your editorial "A Model Optometry Act" and in this regard beg to inform you that at the annual meeting of this body in San Francisco last June a Committee was appointed to assemble all the Optometry laws now extant and to draft from this mass a model law.

A law that will be constitutionally perfect and to cover every phase of our profession.

This Committee will make a report at the next annual meeting in June, 1927.

J. Fred Andreae, Opt. D.,
Secretary,
International Association of Boards of Examiners in Optometry.

SPECIAL REPORTS

PROGRESS IN VISUAL SURVEY WORK

F. P. Barr, Opt. D., F. A. A. O.
Rochester, N. Y.

This is a question which we should apply to ourselves as individuals, at times, in order to get a close-up on our short-comings. It is only by such procedure that we learn to be charitable toward the other fellow whom we feel is making all the mistakes. Silence is golden. President Coolidge, to the thinking people, has clearly demonstrated the wisdom in this saying. The Eyesight Survey and Service Corporation has in the past several months remained quiet, and so much so that it has been felt by many that our existence was short-lived. Our pioneering during the past few years has in action and speech attempted to most forcefully bring the attention of the profession to the "bigness" of visual survey matters in education, industry and transportation. The inattention, indifference and coldness with which we, at times, were received, showed the lack of visualization, by the masses, in the profession of this momentous problem.

Optometrists and Oculists alike have felt it was only necessary to step out of their practice, regardless of how it was being done, and go into this field of endeavor. The time is right now, when they are beginning to realize differently. The Eyesight Survey and Service Corporation through access to, and consideration by, some of the greatest minds in the profession, education, industry and transportation have been able to determine upon a plan of procedure that must eventually be fruitful. Our stumbling blocks have been and will continue to be many.

It is with some of these facts that we hope in this and future articles to impress upon your mind the gigantic and serious problem we have to solve. May we state right in the beginning for your consideration and reconsideration that it is not difficult to sell our service, but it is extremely hard to sell Ophthalmology and Optometry with their short-comings. If the really scientific refractionists and pathologists of the profession could be persuaded to unite their efforts, then a logical starting point would be afforded. This is the basis upon which the Eyesight Survey and Service Corporation is working. We are endeavoring to build the most complete and efficient Optical Visual Survey and Service Corporation in the world.

To this end we have associated (for conference and actual working purposes) the leading Ophthalmologists and Optometrists of this country. We say this without fear of honest contradiction. We are then an Optical Efficiency Engineering organization which in our present plan of operation employ (on salary) only college-trained refractionists to do our preliminary visual survey work.

Their work is impartial, strictly scientific and entirely satisfactory to those we are serving. After a complete report is prepared and given industry we then arrange for a complete, responsible and perfected service through the profession by strictly ethical, professional and efficient local practitioners. The profession assuming the same relationship and responsibility toward employees as they do toward any patient entering their own office. Where merchandise is needed, it must be first quality lenses, standard best quality frames. Medical treatment, muscle exercises, etc., are not included in our service but if satisfactory to industry, employers are cared for in the private practice of our local associates at a compensation of their own arranging. Our engineering force check up at all times on the local refractionist to see that the industry is getting correct treatment in service and merchandise. We charge a service fee, per head, based upon number of employees to be cared for. Our services as well as those of the local associates are based on services rendered, not merchandise supplied. The merchandise profits are secondary.

Let it be thoroughly understood now that our plan is an honorable, upright, efficiency service in which no merchandise need be sold to continue our work. You can readily see why only well and properly trained Oculists and Optometrists may serve through our or-

ganization. We have standardized and systematized forms for examinations, both preliminary and complete that more than comply with all requirements laid down by our courts.

Our engineers and associate refractionists so long as practicing, within their statutory rights, meet all requirements as expert witnesses in compensation claims. This as many other debatable questions our organization has properly fortified their position before going ahead in this work.

The following, as it relates to Optometry, is taken from an opinion handed down, through the educational department, by C. C. Crabbe, attorney general of Ohio:

"However, the fact that Optometrists are licensed by Section 1295-21 et seq. of the General Code of this state, it is believed that they would be competent to testify as expert witnesses as to matters which come peculiarly within the scope of Optometry.

Optometry has been defined by Section 1295-21 as 'the application of optical principles, through technical methods and devices in the examination of human eyes for the purpose of ascertaining departures from the normal, measuring their functional powers and adapting optical accessories for the aid thereof.

It is believed that the fact that Optometrists are licensed by the State of Ohio for the above purpose would make them competent in all cases to testify as to facts which come within their province.

Very respectfully,
Signed C. C. Crabbe,
Attorney General."

In articles to follow under the same heading, we will bring before you valuable information which will show that much more is needed than merely going out to do as you have been doing in your own office practice.

The time is near at hand when individuals and optical companies will find that many more requirements are necessary educationally, legally and financially than they visualize, know of or know how to secure. This is no little job, if you think so, watch future developments.

At all times keep in mind the Eyesight Survey and Service Corporation is the only properly incorporated, educationally and otherwise, organization doing visual survey work where the local efficient, ethical and professional refractionist is a coordinated associate in all work.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

STATE EDITORS

E. B. ALEXANDER, Oklahoma
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Reports of Society Proceedings in Delaware should be sent to Dr. M. Burton Meyer, 101 West Eighth St., Wilmington; in Iowa to Dr. D. A. Kinney, Charles City; in Maryland to Dr. J. F. Andreae, Baltimore; in Minnesota to Dr. J. A. Large, Winona; in Nebraska to Dr. C. A. Perrigo, Freemont; in North Dakota to Dr. A. S. Anderson, Williston; in Oklahoma to Dr. E. B. Alexander, Duncan, and in Vermont to Dr. L. P. Folsom, So. Royalton.

PHILADELPHIA ACADEMY

At the regular meeting of the Philadelphia Optometric Club held at the Benjamin Franklin Hotel on March 3rd, Dr. Chester Johnson read the address delivered by Dr. LeRoy Ryer before the New York Academy. After a general discussion it was decided to change the name of the club to "Philadelphia Academy of Optometry." And with change of name will come change of aims; it is planned to cooperate with other organizations with similar aims and standards; to hold study classes, to arrange lectures, to advertise in a strictly ethical cooperative manner and to build an "esprit de corps" that will bring out the best in Optometry both in practice and in research.

Dr. Julius Neumiller delivered lecture on "Muscle Testing and Muscle Exercising." Dr. Neumiller is lecturer at the Pennsylvania State College and gave his deductions from years of study and research. He has a theory of fusion field development versus muscle balance that so interested the members that the discussion was prolonged till long after midnight.

It is desired that new members enroll, the only requirement being that a practitioner be ethical and ambitious enough to be willing to study so as to keep abreast of Optometric progress. Meetings are held the first Thursday of each month at the Ben Franklin Hotel preceded by a dinner at six-thirty at Greens Hotel. At next meeting, the program arranged is series of professional papers as follows: Dr. J. F. Neill, "The Use of Homatropine"; Dr. G. A. Spenser, "Deductions from Daily Practice"; Dr. M. Burton Meyer, "Diet as an Aid to Optometric Treatment"; Dr. Julius Neumiller, "Developing the Fusion Field." Visiting Optometrists are always welcome.

Dr. B. Meyer,
Correspondent.

MINNEAPOLIS OPTOMETRISTS CONDUCT FREE EYE CLINIC

The Minneapolis Optometric Association held a one day free eye clinic March the 24th at the Spanish Room, Radisson Hotel, Minneapolis.

Dr. Carl F. Shepard of Chicago, was the chief clinician assisted by Dr. Alex S. Cameron. The following members of the Association participated as assistant clinicians: Drs. C. C. Koch, J. I. Kurtz, C. A. Hoffman, A. H. Nordland, C. P. Nelson, Arthur Norstrom, Einar Markhus, J. E. Peterson, Louis L. DeMars, John Linner, Chas. Jordan and L. T. Arduser.

Out of town visitors at the clinic were: Drs. Jos. L. Frank, of New Prague, president of the State Association, Henry Watzke, of Morris, Vice-president, Jos. Houtein, Red Wing, and E. H. Kiekenapp of Faribault.

The following jobbers loaned equipment for the clinic: The American Optical Company, The Benson Optical Company, The Riggs and Walman Optical Companies.

The clinic was open from 8 A. M. until 9 P. M. One hundred and twenty patients were refracted. Most of the cases were children with convergent or divergent strabismus. Dr. Shepard demonstrated the technic of using the Myoculator in testing and treating strabismic cases.

The clinic was a huge success from every standpoint. Only Association members of good standing, who conduct an ethical practice participated in the clinic.

Plans are now being laid to hold another clinic on a much bigger scale in the near future.

WASHINGTON SOCIETY ELECTS OFFICERS

At the annual meeting of the District of Columbia Optometric Society, Inc., held in the Raleigh Hotel, Washington, D. C., April 4, the following were elected to hold office for the ensuing year: President, Drs. Lewis H. Kraskin; First vice-president, M. A. Leese; Second vice-president, Edwin H. Etz; Treasurer, Paul W. Kimball; Secretary, Edwin H. Silver; Trustees: Drs. George T. Warren, George A. Baker, M. Luther Dicus, Bernard A. Baer, Samuel J. Dantzer.

CALIFORNIA STATE ASSOCIATION CONVENTION

Several hundred members of the profession are expected to cross the channel on May 19th when the California State Association holds its annual meeting and educational congress at Avalon, Catalina Island, next May—19, 20, 21.

At least, from the point of view of scenic splendor, the annual convention of the California State Association of Optometrists should rival any similar gathering ever held.

A committee headed by Arthur Hoare, Opt. D., of Los Angeles, is arranging an interesting list of speakers. A well known educational leader and a prominent physician, in addition to authoritative optometrists are scheduled to appear. Harry Goodman, Opt. D., of Los Angeles, is in charge of arrangements, and Herbert S. Marshutz, Opt. D., also of Los Angeles, of publicity.

Special rates have been granted by the Santa Catalina Company so that the boat trip and the hotel accommodations will be anything but a financial burden to the visitors.

"Make the convention a vacation," is the slogan that the committee in charge is following.

DELAWARE ASSOCIATION ACTIVITIES

At the last meeting of the Association all the officers were re-elected. Dr. L. S. McKee, President, Dr. J. Clifford Compton, Vice-president, and Dr. Thomas Logan, Secretary and Treasurer.

A post graduate course lasting one week was held by Dr. A. M. Skeffington. The members of the Association were greatly pleased with the results of the course and invited Dr. Skeffington to come back to them again next year. The Association was successful in having the Optometry Law amended so as to raise the preliminary educational requirements to four years of high school or its equivalent and the applicant is to be graduated from a school or college approved by the Board of Examiners, which maintains a course of Optometry of at least three years residence work.

Members of the Association who spoke on the amendment at the public hearing before the committee made a very favorable impression and had the pleasure of seeing the amendment unanimously endorsed and recommended for passage. At the time this Journal goes to press we are informed by Dr. M. Burton Meyer that the amendment passed the house and senate and was signed by the governor.

FOR SALE—A TEN THOUSAND DOLLAR OPTICAL BUSINESS, old established concern. We invite investigation. Would rather sell only half interest. Will consider sale of entire business if desired. I want to get out in the open. This business is of twenty-eight years standing. Anyone who is qualified and interested to give it his attention can enter the BEST OPTICAL BUSINESS IN OKLAHOMA. Latest modern equipment throughout. I just wish to retire. This is my only reason for selling. My health is fine. $8,000 will handle entire business. I know of nothing that will bring such large returns on a similar amount invested. Write A. D. Coon, Ada, Oklahoma.